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ABSTRACT

In response to increasing pressures for improvement in the management of resources, many institutions of higher education have investigated the application of planning- programming-budgeting- systems (PPBS) some have adopted it to meet the demands imposed by jurisdictional agencies, and a few have introduced it frequently in modified form into their own internal budgeting procedure. The paper traces the development of PPBS in higher education and discusses some of the commonly observed deficiencies. It concludes that although its application can assist institutions in the management of their operations by supplying better measures of optional courses of action and providing an interrelated view of both the present and the future, it is likely to raise the level of conflict and to provide an apparent mechanism for increasing centralized control and direction. (Author)

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THE APPLICATION OF PPBS IN HIGHER EDUCATION: A STATUS REPORT

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In recent years institutions of higher education have been plagued by a seemingless endless array of problems — a decline of public confidence, student concerns for educational values, and an ever deepening fiscal crisis. In response, jurisdictional agencies and institutions themselves are devoting more attention to the processes employed to manage their resources. Evidence of this has been a growing interest in the application of planning-programming-budgeting-systems, upon which public sector organizations have looked as a mechanism to improve the decision process in resource allocation. As a result, many institutions of higher education have studied the applicability of PPBS, some have adopted it to meet the external demands imposed by jurisdictional agenices, and a few have introduced it frequently in a modified form into their own internal budgeting procedure.

Critics of PPBS contend that the concept has not fulfilled its original promise and perhaps in the very strict sense it has not. However, at the very minimum it has brought about the adoption of a more rigorous and rational structure for decision-making than was previously in evidence at most institutions of higher education.

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CHARACTERISTICS OF PPBS

The variability of success in the application of PPBS lies in the fact that it is not merely a technique but, as James Farmer has observed, represents an organization of people and equipment applying a technology to the management of an institution.(1) An organization using PPBS must assign responsibility for each of the three steps of PPBS — Planning, Programming, and Budgeting — to specific organizational units, develop the procedures for their interrelationship, and be intellectually dedicated to management of that organization through the specific process.

In brief PPBS is a system for

1: selecting the overall long-range objectives of the organization and the systematic analysis of various courses of action leading to their attainment,

2: deciding on the specific courses of action to be pursued, and

3: translating planning and programming decisions into explicit financial requirements for resources.

PPBS provides a means to attain this objective through the use of a program budget and the application of cost-benefit analysis. A program budget is simply a format for organizing information about the costs and benefits of the output of an organization. Its principal distinguishing characteristics are —

1: A structure of activities in terms of output-producing programs.

2: The organization of these programs in relation to explicitly stated objectives.

3: A focus on the outputs as well as the cost of programs.

4: A projection of both outputs and costs into the future.

Cost-benefit analysis is a methodology, on which agreement on appliciability has been reached in any given organization, for measuring the relative costs and benefits of optional courses of action. Its purpose is to provide a basis for program selection within an environment of constrained resources. At our present state in the development of what only can be characterized loosely as the science of cost-benefit analysis, it is of paramount importance to recognize that there must be concurrence among the decision-makers on the applicability for their own circumstances of a given set of analytical procedures.

DEVELOPMENT OF PPBS IN HIGHER EDUCATION

Initial consideration of the applicability of PPBS to higher education can be traced to several studies published in 1968. One prepared by Williams for the American Council of Education contended that the mechanism utilized by the Department of Defense for planning and budgeting could be applied to higher education.(2) It is perhaps appropriate to pause at this point to reflect upon some of the implications of this study and how its conceptual views may have shaped the direction of PPBS application efforts in higher education. In their analysis of the Williams' report, Weathersby and Balderston have noted that the orientation of the staff input, which was drawn from the Institute for Defense Analyses, perhaps led to the adoption of the premise that it was appropriate to simply transfer Defense Department

PPBS procedures directly to higher education; this they contrast to the earlier development of PPBS for the Department of Defense which began years before by questioning the then applicable tenets of policy and military operation.(3) As a result, the Williams' report approximates current activities rather than educational objectives as represented by programs. This activity oriented view, in which programs are represented by academic organizational units such as departments and schools, has been followed in a major portion of the subsequent applications of PPBS to higher education.

The year 1968 marked an impetus for a broad research program concerning management processes for higher education. Through a series of grants provided by the Ford Foundation to educational institutions in the United States and Canada, comprehensive projects were initiated on areas such as analytical methodology, planning models, budgeting, and data management. These efforts were undertaken at the University of Toronto, University of California at Berkeley, Stanford University, Princeton University, Massachusetts Institute of Technology, and the University of Georgia and, two years later, at NCHEMS as a result of a subsequent grant. Also in 1968, the Organization for Economic Cooperation and Development, performing a role analogus to NCHEMS in the U.S., began the coordination of a series of projects at European universities covering both the application of program budgeting and the development of supporting analytical models.

The environment for the long-term conduct of a broadly based program on the design, development, and implementation of management information systems for higher education was provided through the funding by U.S. Office of Education of what has evolved into the National Center for Higher Education Management Systems at the Western Interstate Commission for

Higher Education. Building upon the concept of program structured data collection and analytical methodology, NCHEMS is currently the focus of PPBS related activities in the United States. To date, they have prepared, in conjunction with personnel drawn for educational institutions and jurisdictional agencies, manuals dealing with space analysis and personnel classification, a program classification structure, a data element dictionary, an inventory of output and activity measures, and a computer based program for projecting the resource costs of alternative programs.

Concurrent with the development activities relating to the application of PPBS to institutions of higher education, pressure arose at the state-level of government for adoption of improved resource allocation procedures. The actual mechanism by which this was generated varied from state to state. In some, it was an outgrowth of the creation and/or expansion of statewide coordinating and governing agencies for education. In others, it represented response to the demands imposed by elected state officials for improved budgetary and control procedures for the entire gamut of programs under state jurisdiction.

DEVELOPMENT OF ANALYTICAL MODELS

Coincident with the evolutionary development of PPBS for higher education, a need arose for informational support. However, unlike the demands from most existing budgetary procedures, the informational requirements could not be met directly through simple records of observation. Fortunately, but not necessarily by design, the tools necessary to support analysis and planning were developed concomitantly with PPBS.

The first institutional cost models were developed in the late 1960's by Fox, McCamley, and Plessner at Iowa State, by Judy and Levine at Toronto,

Weathersby at California, and Koenig at Michigan State. These models, by simulating the educational production process, provide estimates of the resource requirements associated with changes in student enrollments or in operational configurations. In general the models are discriptive, rather than prescriptive, and accept either the recent historical experience or a planner's judgment as the justification for assuming the continuation of the same patterns of instruction.

These initial efforts led to the development of a wide variety of special application methodology. From a technique viewpoint, they involved the entire span from simple statistical analyses to sophisticated optimization models and covered such subjects as projecting student enrollment, scheduling instructional space, calculating capital investment, forecasting revenues, and computing unit costs.

CURRENT LIMITATIONS

The application of PPBS in higher education is not without commensurate encounter of problems. However, it is important to view these problems not as insurrmountable obstacles on the path to success but as limitations imposed because of our current frontier of knowledge. The development of PPBS has been an evolutionary process and currently observed difficiencies may be resolved by the same process. Some of the more commonly observed deficiencies are as follows:

1: First of all, it is at best difficult to identify and quantify the outputs of higher education. Surrogates such as degrees, credits, and the like are not truly satisfactory and fail to reflect the variations in quality of education programs.

2: PPBS applications in higher education have tended to be activity rather than program oriented. Although this may be an adequate interim solution, it may not prove to be suitable over the long run. Traditionally educational institutions have been organized along a subject-matter departmental structure. But no department by its own efforts alone produces a unique output, such as a degree. This presents a dichotomy for the efficient management of resources.

3: Production functions for higher education are not known. As Farmer has pointed out, there is no accepted algorithm for determinining the resource requirements for a unit of output nor the use of resources for the production of joint outputs, such as graduate instruction and research.(1)

4: Existing financial systems are generally not suitable for accounting for the expenditure of resources in accord with purposes and programs for which they are intended. As Cavanaugh has noted, there has been no attempt by the accounting profession to develop rigorous and sophisticated techniques that could do for not-for-profit organizations what modern accounting has done for business.(4)

5: There is still an imbalance between decision requirements and available information on which to base them. In particular, analytical efforts need to be directed toward the development of models encompassing the aspect of benefits.

CONCLUSION

During the last five years, there has been a substantial interest in improved planning and analysis in higher education. This has led to the

the adoption of PPB Systems and the development of new supporting analytical methodologies. In general these PPBS efforts have simply translated to higher education a technique which was designed originally for the Department of Defense. The program formats have been structured on activities rather than objectives and the analytical models have been concerned with costs and not benefits. However, in spite of these limitations and as much as both the concept and the measurements need refinement, they represent on a combined basis a significant advance in resource management for institutions of higher education.

At the same time recognition must be given to both the institutional and jurisdictional ramifications resulting from the application of PPBS. From an institutional standpoint, internal discord may increase rather than decrease since the use of explicit institutional objectives for decision making do not provide the latitude for individual interpretation of goals. In addition, the availability of detailed institutional data may cause state and Federal officials to exert their influence on relatively low level decisions; although PPBS does not necessarily lead to increased centralization of decision making, political pressures towards centralized control are unfortunately bolstered by the availability of data and analyses.

In essence, PPBS can assist both the faculty and administration in institutions of higher education in the management of their operations by supplying better measures of the impact of decisions on optional courses of action, systematizing institutional data, and providing a more comprehensive and interrelated view of both current and projected operations. On the other hand, the use of PPBS requires an intellectual commitment to and resources for the conduct of the planning process, may increase rather than decrease the levels of both institutional and political conflict, and provides an apparent mechanism for increased centralized control.

(1) Farmer, James; "Why Planning, Programming, Budgeting Systems for Higher Education?", W.I.C.H.E.; 1970

(2) Williams, H.; "Planning for Effective Resource Allocation in Universities"; A.C.E.; 1966

(3) Weathersby, G.B., and Balderston, F.E.; "PPBS in Higher Education Planning and Management"; University of California, 1971

(4) Cavanaugh, A.D.; "A Preliminary Evaluation of Cost Studies in Higher Education"; University of California, 1969